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Version 5 Release Status and Plans

AIRS Science Team

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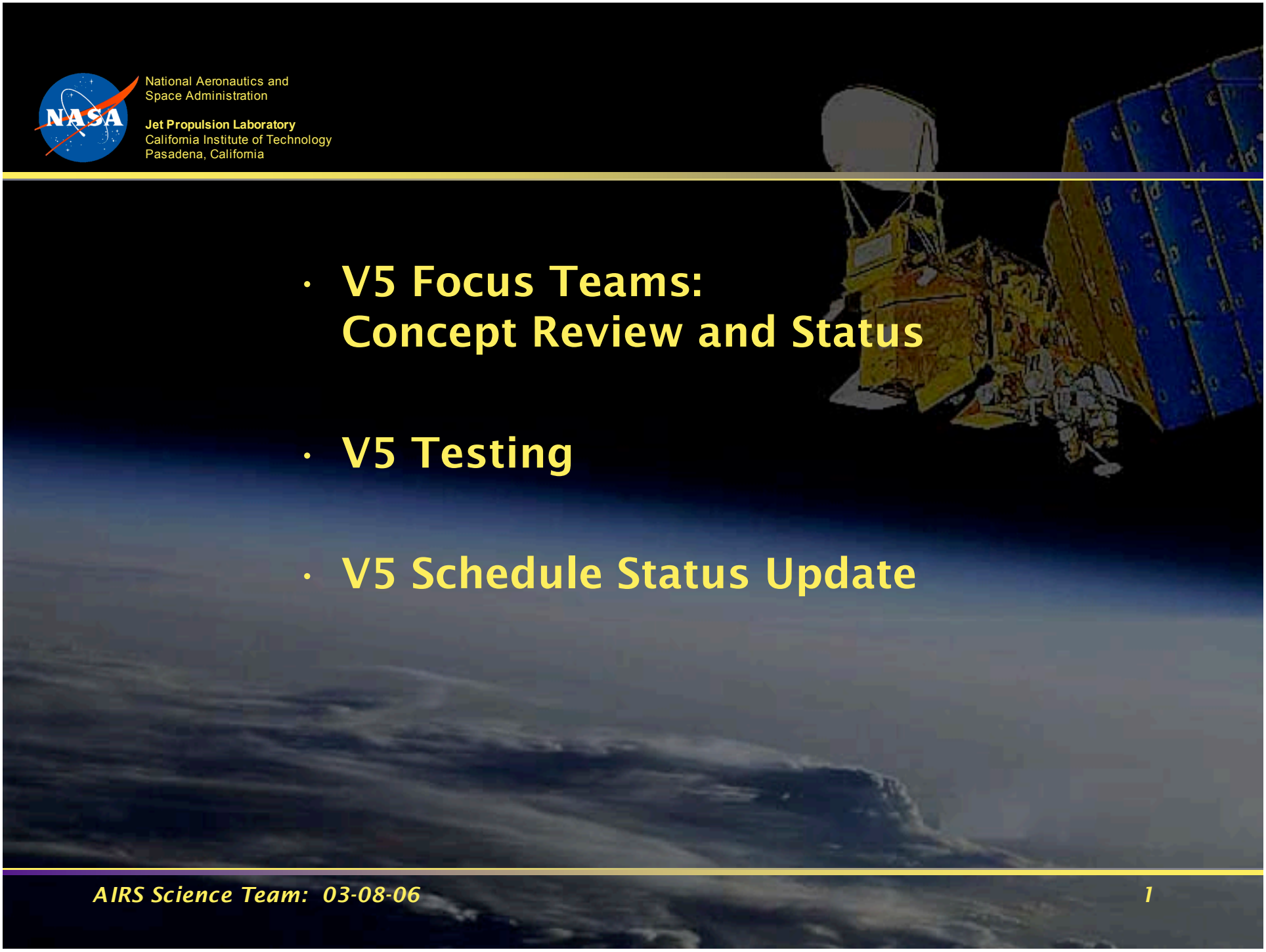
Atmospheric Infrared Sounder Project

March 8, 2006



- V5 Focus Teams: Concept Review and Status
- V5 Testing
- V5 Schedule Status Update

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Version 5 Concept Review
Version 5 Science Focus

- **Consensus was reached at May 2005 Science Team Meeting: Improvements to Version 4, Level 2, were possible:**
  - *Optimize AIRS data for climate research*
  - *Enhance weather forecasting impact*
- **A software development concept for Version 5 was proposed that would involve a new working paradigm: *"Focus Groups"***
- **Six focus groups were identified to address specific topics:**
  - Bias correction
  - Retrievals without AMSU (AIRS-only)
  - Surface emissivity retrievals
  - Level 2 product error estimation
  - Minor constituents
  - Calibration* (*Note, established after Science Team MTG)

Version 5 Concept Review
Roles and Responsibilities - V5 Focus Teams

- **Each Focus Group was chartered to:**
  - Study and understand a specific problem
  - Prototype software improvements and confirm assumptions
  - Demonstrate improvements to entire Science Team
  - Document their work
  - Deliver "tested" code to JPL

- **Teams were reminded to keep in mind:**
  - Mutual dependencies!
  - The end game! – we have to deliver V5
    - … a fully team-integrated V5
    - … a fully functional V5

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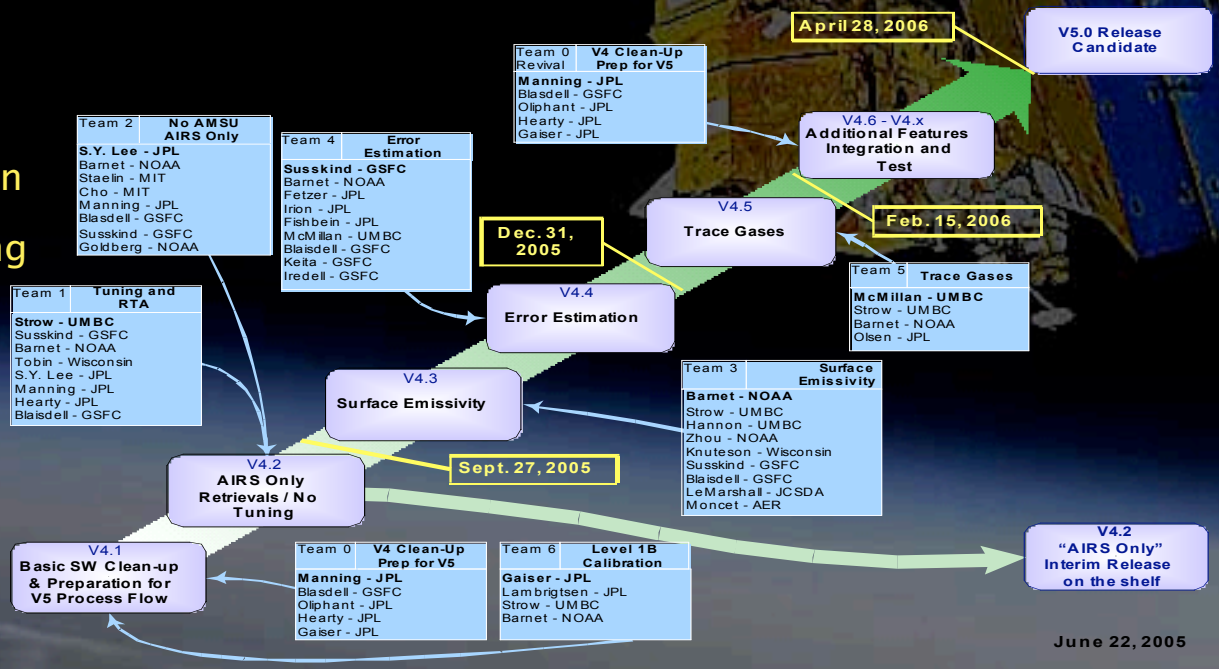
Version 5 Concept Review
V5 Teams – March 2005 Baseline Schedule

- **V5 Focus Teams established March 2005**
- **September 2005**
  - Concept definition
  - Prototypes – proof of concept
  - V5 "features" decision to be made at this Science Team Meeting
- **December 2005**
  - Final design
  - Code delivery from most external teams
- **February 2006**
  - Minor Constituents
  - Final table updates
- **April 2006**
  - Code development complete
  - Begin Validation data processing
- **June 2006 Code Delivery to GSFC DAAC**



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V5 Development Status
Where are we today?

- **V5 Focus Teams have progressed well**
- **Minimal schedule slip has occurred**
  - Approximately 4 to 8 weeks behind schedule
- **Some planned work remains:**
  - Minor Constituents
  - AIRS-Only Retrieval
- **Additionally, new "limited-scope" V5 activities may be proposed at this meeting!**
  - Collectively, we will help the AIRS Project determine:
    What should still be added in the V5 time frame?
    What needs to be deferred until V6?
- **And – more testing!**
  - *More on this topic follows!*

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V5 Testing

…a work in progress

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Version 5 Testing *Approach*

- **V5 Testing will be more comprehensive than previous releases**
- **Our goals:**
  - To produce a significantly better quality release
  - To achieve better understanding of the Level 2 product
  - To learn what improvements are necessary for V6
- **Cooperative testing effort:**
  - Focus Teams: Pre-delivery testing before integration at JPL
  - JPL: Comprehensive test procedures to delve "inside" the PGE

Version 5 Testing
Science Team Support

- **Foundation of V5 Quality rests on Focus Group Testing**
  - Some results will be presented at this Science Team meeting
    - Most code has already been delivered
      - Testing requirements were loosely constrained

      (Still, we trusted you.)
  - **New code is still being proposed (!?)**
    - Test results must be presented before inclusion into V5 baseline

      (We only trust you so much!)

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Version 5 Testing
JPL Testing Overview

- **Testing at JPL will be comprehensive, leading to:**
  – a better product
  - an improved understanding of V5
- **Testing Features:**
  - Global and "Focus Granule" Analysis
  - Stratified Analysis
  - Improved procedures to understand secrets within the Level 2 PGE
- **Testing Goals:**
  - Identify problems within components of the V5 PGE
  - Fix what we can for V5
  - Document remaining problems as liens
    - V6 release candidates?

Version 5 Testing
Detailed Testing Procedures

- **Detailed testing procedures are being developed**
- **Test procedures to include:**
  - Input dataset descriptions, specifications
  - Identification of parameters to be analyzed
  - Description of "expected" outcomes
- **After completion of each test:**
  - Detailed analysis of test results will be performed
  - Test results will be documented
  - Tests will be reviewed by the AIRS Software CCB and reported to the AIRS Project and Science Team

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Version 5 Testing
Global and Focus Granule Analysis

- **Global Analysis (one day's data – 240 granules)**
  - Global maps of yield, maps of changes in yield from V4
  - Difference maps w/ respect to ECMWF and V4
  - Quantitative assessments of: yield, bias, RMS
  - Scatter plots of relevant parameters

- **Focus Granule Analysis**
  - 12 Focus Granules have been selected
    - Represents problematic regions w/ respect to retrievals
    - Coverage across several representative "focus days" in 2003
  - Production of granule maps and comparative maps as above
  - Study additional intermediate parameters within the PGE
  - Will provide improved capability to look "within the granule"

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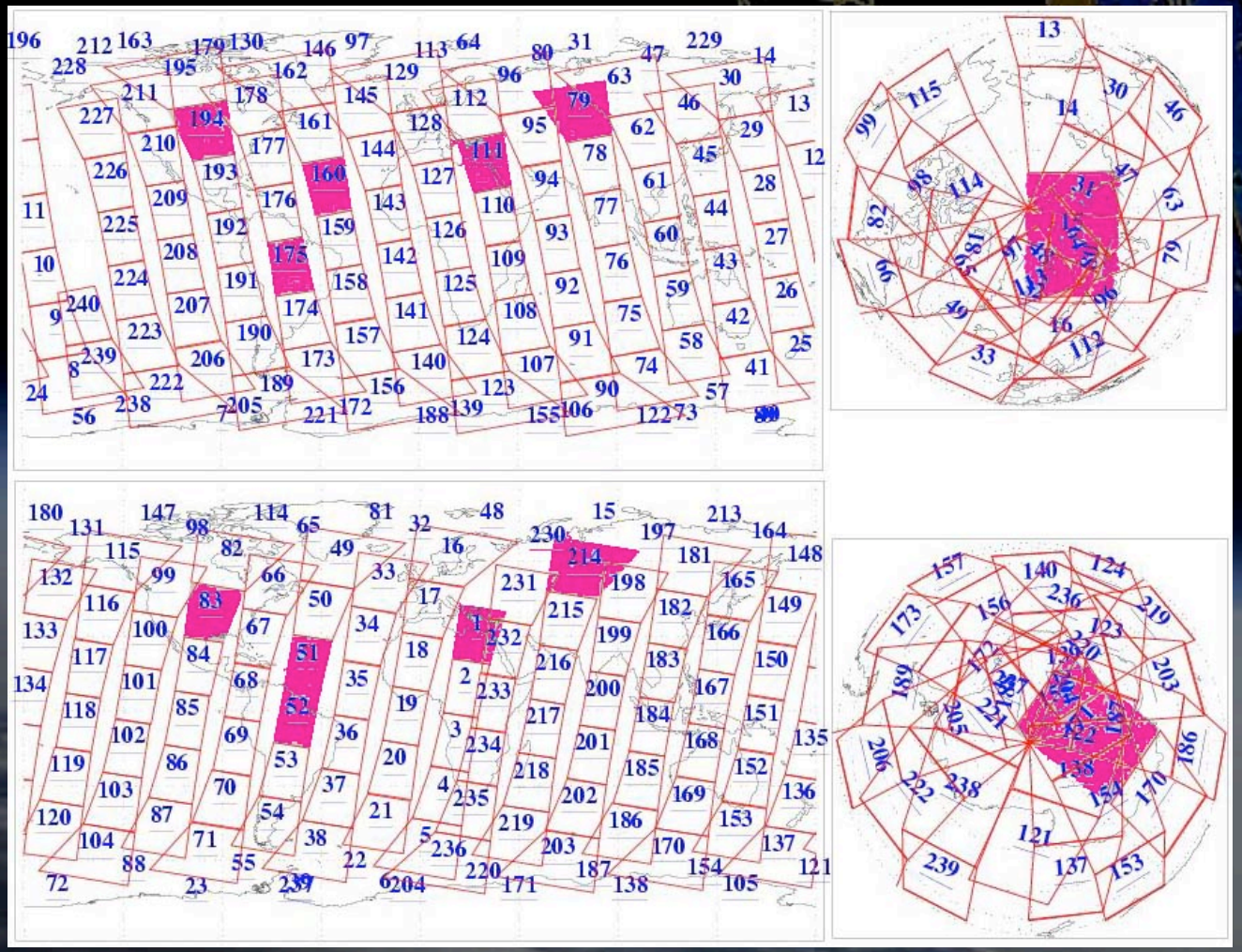
Version 5 Testing
Diverse Focus Granules

Focus Granules Include:

- **Open ocean (mid-Atlantic)**
- **Grassland (US Midwest)**
- **Jungle (Brazil)**
- **Desert (Saharan)**
- **Tundra (Siberia)**
- **Polar**



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Version 5 Testing
Stratified Analysis

- Zonal and regional stratifications will enable better understanding
- V4 – testing limited to two categories: ocean and land (up to 55º)

	Ocean	Land
Equatorial to higher-latitudes (≤55˚)	X	X
Polar (>55˚)		

- Greater stratification for V5

	Ocean	Non-Frozen Land	Frozen Land
Equatorial to higher-latitudes (≥66˚)	X	X	X
Polar (<66˚)	X	X	X

- Diurnal factors to be analyzed across all focus granules
- Seasonal variations to be analyzed for some focus granules - polar granules especially

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Version 5 Testing
Delving into the PGE

- **In addition to evaluating Level 2 Standard Products, data at "interim" Level 2 processing steps will be analyzed:**
  - Input QA filter (very beginning of PGE)
  - Microwave Retrieval / Cloudy Regression (AIRS-Only)
  - Initial Cloud-clearing
  - First Regression
  - Final Cloud-clearing
  - Final Retrieval
  - Output Processing
- **In addition, IR RTA results will be analyzed for selected Focus Granules**
- **Trend Analysis performed for incremental builds as needed**

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Version 5 Testing
Testing Matrix

Level 2 Subsystem	Global Analysis	Stratified Zones*	Focus Granules
Input QA	X		
MW Retrieval / Cloudy Regression	X	X	X
Initial Cloud-Clearing			X
First Regression	X	X	X
Final Retrieval	X	X	X
Final Cloud-Clearing			X
Output Processing	X		X
IR RTA			X

*Includes combinatory groups of: ocean, land, polar, day, night.

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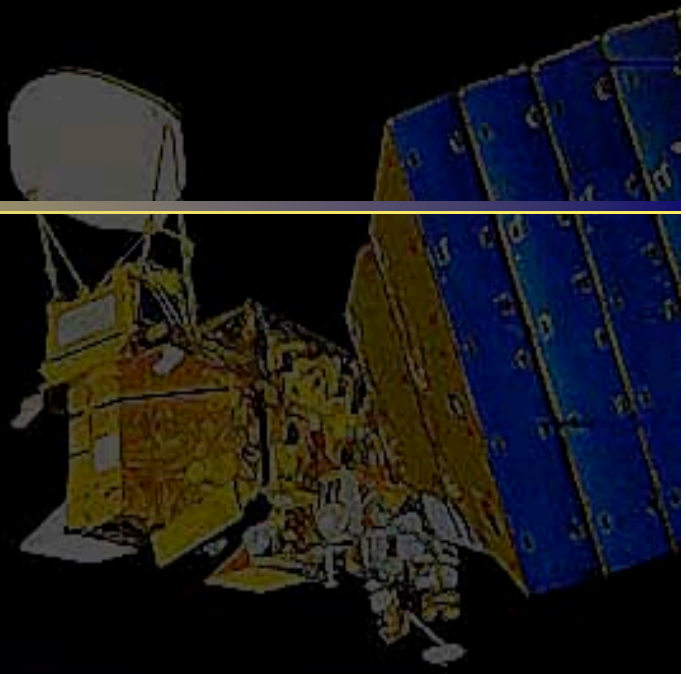
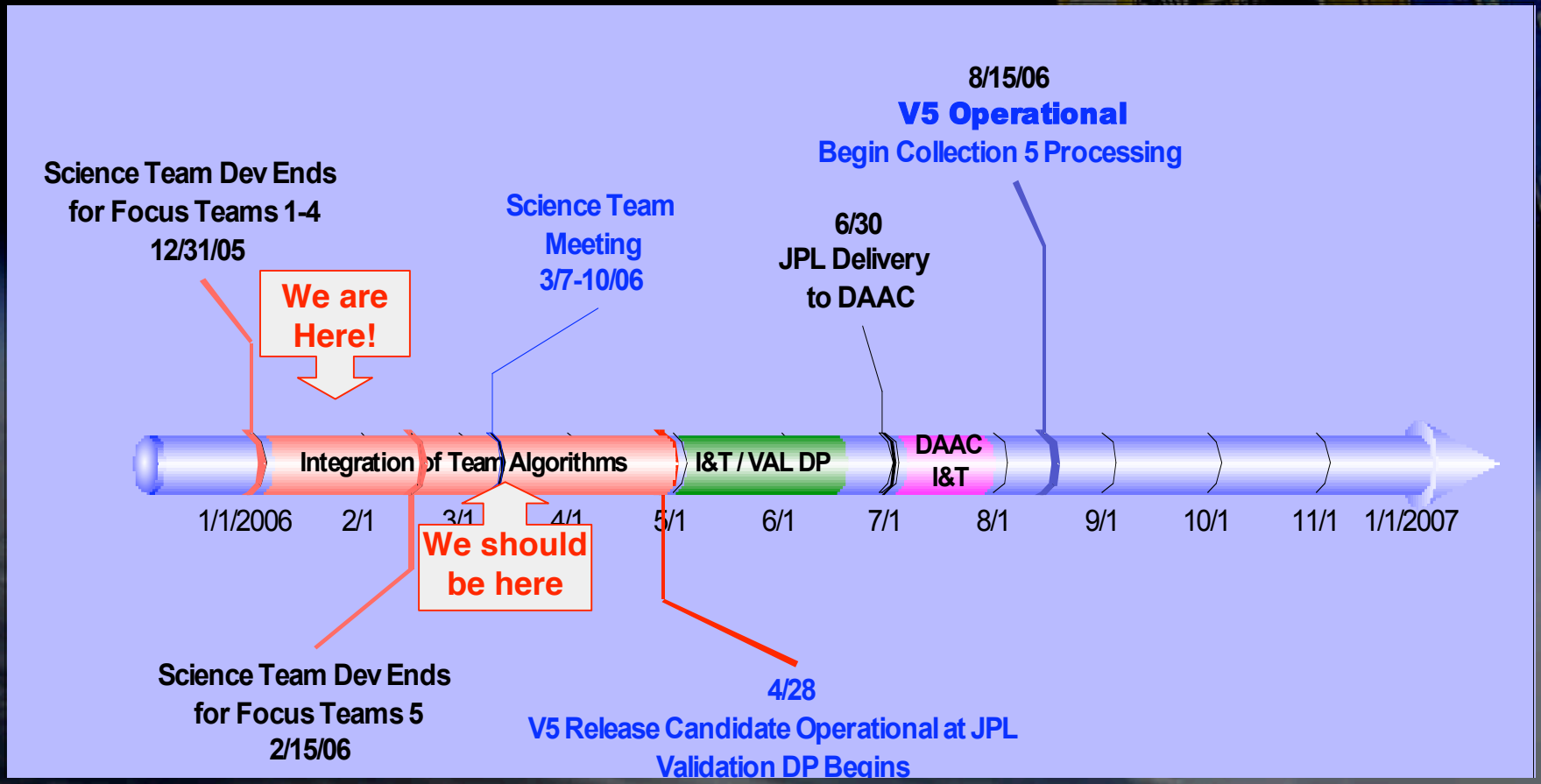


The V5 Schedule

- Where are we?
- Where are we going?

V5 Schedule
Milestone Review

- **Important V5 Milestones (FY'05 Plan)**



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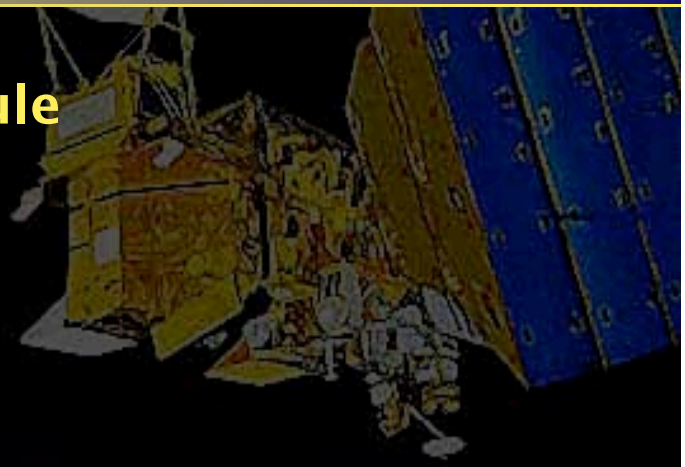
V5 Schedule
Schedule Assessment



- **We are about 8 weeks behind schedule**
- **Additional work to fill in the gaps**
  - Level 1B – only few minor updates
  - Level 2
    - Minor Constituents
    - AIRS-Only Retrieval, including Error Parameters, QA
    - Emissivity First Guess (???)
  - Level 3
    - Completion of Level 3 enhancements
    - Addition of a Level 3 Support Product
- **Other work proposed at this meeting???**

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V5 Schedule
Proposed Schedule Revision

- We must still deliver V5 before end of FY'06

- To be continued …